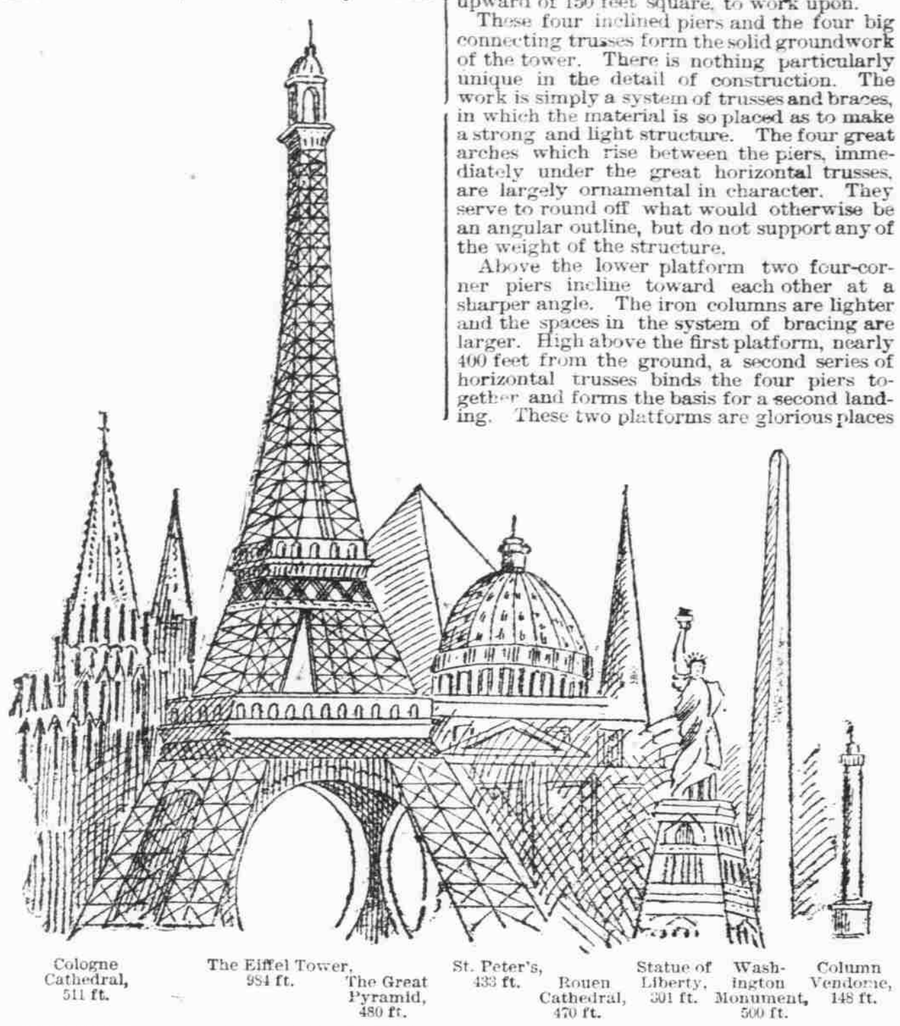
NEARLY 1000 FEET HIGH.

The Great Eiffel Tower at the Paris Exposition.

How the Colossal Structure, Just Completed, was Erected.

The great Eiffel tower at the Paris Exhibition has just been completed, and a description of the colossal structure, with an account of the way it was built, and a sketch of its constructor, will be appropriate at this time. It is scarcely necessary to say that the



Cologne Cathedral, 511 ft. | The Eiffel Tower, 984 ft. | The Great Pyramid, 480 ft. | St. Peter's, 433 ft. | Rouen Cathedral, 470 ft. | Statue of Liberty, 301 ft. | Washington Monument, 500 ft. | Column Vendome, 148 ft.

Eiffel tower is by far the highest structure in the world. It presents a decidedly unique appearance, too—in general outline not unlike a stack of four gigantic muskets with their butts well and solidly spread and their bayonets joining at their tips.

The Eiffel tower stands in the Champ de Mars, almost on the left bank of the river Seine, just in the rear of the Quai d'Orsay, and in fact a part of its foundation is sunk through an old arm of the river, which has been filled in these many years. Its base covers a plot of ground 328 feet square, or nearly two and a half acres in extent.

GUSTAVE EIFFEL.

It is really at the base a group of four towers, each nearly fifty feet square, placed at the corners of the plot of ground, and inclining toward each other as they rise at an angle of fifty-four degrees. Each tower consists of four columns, bound together by trusswork, and each column rests on a masonry pier which is so built that the weight of the column rests upon it squarely and not at an angle.

As the tower is 984 feet high, it will be seen that the matter of providing a solid foundation was one of great importance. There was a lot of boring and digging before the spot upon which the tower stands was finally selected.

The foundation rests upon a thick stratum of sand and gravel. It may be well to say, for the benefit of those who think sand is a rather treacherous sort of ground, that a bed of sand and gravel, away under ground, is pretty solid stuff. One of the towers of the Brooklyn Bridge rests on that sort of base. The foundations of the two piers of the Eiffel tower farthest from the Seine rest on sand and gravel about twenty-five feet below the surface of the ground. These foundations were laid in open excavations, and consist first of great solid platforms of beton, six feet thick, and next of four stone piers which rise to the surface to receive the iron columns.

The foundations for the two piers nearest the river were not so easily laid. It was necessary to go thirty-five feet below the surface of the ground, and this was sixteen feet under water. So caissons had to be used, as they were in building the Brooklyn Bridge piers.

A caisson is in effect simply an enormous iron box, without any cover, turned upside down. The method of using it is to dig the earth out from under it and allow it to gradually settle as the excavation progresses, meanwhile building the pier on top. When the required depth is reached the caisson itself is filled up with the beton, and it forms the bottom layer of the foundation. A shaft is left running through the pier above for entrance and exit as the work goes on, and the air in the caisson and shaft is compressed to whatever is necessary to keep the water out of the bottom. It is the principle of the diving bell modified.

Work on the foundations was begun on January 28, 1887, and at the end of June they were completed. Then began the labor of setting up the innumerable pieces of iron of which the tower is composed, and it went on at a rapid rate, for each individual piece came from the works of M. Eiffel, at Levallois-Peret, cut to its exact dimensions, fitted and drilled, so that no modification was necessary at the place of operations. Up to a height of about fifty feet the workmen required no scaffolding to work upon, as each pier supported itself, although each leaned toward the others. Then an artificial support had to be provided, as above that height, until the first platform was reached, the center of gravity of each pier would fall outside of the base.

And so piece by piece the towers grew, and at length reached a height of 140 feet. Then four enormous horizontal trusses were put in place to connect the four piers. These were nearly 140 feet long and weighed a good many tons, and in order to place them in position it was necessary to erect an extensive false work, or scaffolding. When these trusses were in position, and the connecting beams to form a flooring were in place, the workmen had a great solid platform, nearly 150 feet above the ground and upward of 150 feet square, to work upon.

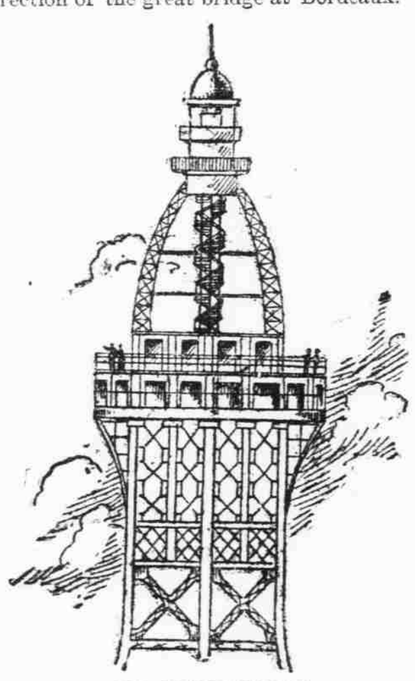
These four inclined piers and the four big connecting trusses form the solid groundwork of the tower. There is nothing particularly unique in the detail of construction. The work is simply a system of trusses and braces, in which the material is so placed as to make a strong and light structure. The four great arches which rise between the piers, immediately under the great horizontal trusses, are largely ornamental in character. They serve to round off what would otherwise be an angular outline, but do not support any of the weight of the structure.

Above the lower platform two four-corner piers incline toward each other at a sharper angle. The iron columns are lighter and the spaces in the system of bracing are larger. High above the first platform, nearly 400 feet from the ground, a second series of horizontal trusses binds the four piers together and forms the basis for a second landing. These two platforms are glorious places from which to view the city of Paris. They are so large that even very timid persons standing on them will lose all fear. The lower one is nearly half an acre in extent while the upper one is about one-third that size. From the platform a view of the country for forty miles around may be obtained.

Above the second platform the four corner piers gradually approach each other and at length unite in one pier, at the top of which, nearly a fifth of a mile from the ground, there is a covered observatory, and above this rises a slender mast. Doubtless many thousand people will see Paris and ever so many square miles of surrounding country from the observatory during the summer. They will not have to walk up, for a gigantic elevator runs up through one of the piers to the very top. This elevator is of peculiar construction, for the carriage or truck, travels upward on a spiral track, while the car itself rises vertically, or rather as nearly vertically as the angle of the pier will allow.

While the Eiffel tower was a stupendous conception, and will stand as completed the marvel of modern engineering, no new principles are involved in its construction. In fact, to an engineer, the most wonderful thing about the tower is its simplicity. The way for the Eiffel tower, both in conception and execution, was paved, after a fashion, by the work on the Garobit viaduct and the Taraes bridge, both of which were built by Eiffel. In fact, the construction of bridges and viaducts, without the use of scaffolding or false work, by making the several parts balance themselves as the work progresses, owes much to this French engineer.

Gustave Eiffel is a master of construction. It is said of him that he combines within himself the practical knowledge of the English engineer, the audacity of the American and the science and theories of the Frenchman. He was born at Dijon, France, in 1832, and was educated at the Central School of Sciences and Arts. He it was who first made practical use of compressed air in cassions in the building of bridge foundations, in the erection of the great bridge at Bordeaux.



TOP OF THE TOWER.

M. Eiffel has been a busy man, indeed, these many years, but he found time, when the statue of Liberty Enlightening the World was to be set up in New York Harbor, to design the skeleton framework which supports the gigantic figure and at the same time firmly holds it to the granite pier on which it stands.

A glance at the illustration will show to what extent the Eiffel tower overshadows all the famous tall structures of the world. In comparison with its 984 feet Cheops is dwarfed at 480. The Washington Monument is little less than 500 feet high, and the point of the flame of Liberty's torch in New York Harbor rises barely 300 feet in the air.

The fees for ascending the Eiffel tower are five francs ($1) to the top, three francs (sixty cents) to the second platform and two francs (forty cents) to the first. The three platforms will hold 10,000 people.

THE SAMOAN DISASTER.

Particulars About the Wrecking of Our Ships at Apia.

Survivors Bring the Story of the Great Calamity.

The steamer Alameda arrived in San Francisco bringing advices from Apia, Samoa up to March 30.

The steamer stopped at the Samoan capital and took off many of the shipwrecked sailors.

Among those who came upon the Alameda were Chief Cadet Robert Stocker and Cadets Hibbs, Decker, Wells, Cloke, Sackland, Lejure, Wiley and Logan, and Dr. Corders, all of the Vandalia. Lieutenant Ripley came on the Alameda, with thirty men, but stopped off at Honolulu.

The hurricane which cost so many lives at Samoa began about 2 o'clock on Saturday morning, March 16, and lasted until Sunday at a little after 5 o'clock in the morning.

The Eber, the German vessel, was the first to be wrecked. She broke up in pieces in a few minutes, only one officer and four men being saved. Her guns, which were of great weight, probably assisted in smashing her so quickly.

Shortly afterward the Adler (German) also drifted on the same reef a little further westward. She was lifted high and dry, and is now lying on her port side high and dry, only a few feet of her side being under water at high tide. In all twenty men were lost from the Adler.

The United States steamer Nipsic was the next on the list of casualties. It was observable from the shore that she would not be able to hold out. She was drifting toward the reef, and at about nine o'clock she headed for the shore and just touched the points of the reef with her rudder, which was carried away, together with her stern post, but, by the skillful management of the captain and officers they succeeded in beaching her on the sand. Great credit is due for the manner in which the Nipsic was handled, for if she had gone on the reef a larger number of lives would undoubtedly have been lost.

As it is seven men were drowned, but all would have been saved if they had stuck to the ship.

Early in the morning the Olga collided with the Nipsic, doing the latter considerable damage, carrying away her smokestack, steam launch, whaleboat and part of her bulwarks. On account of the smokestack being broken off the furnaces would not draw to keep a full head of steam on. Excepting for this accident the Nipsic, which had powerful engines, might have rode out the gale in safety.

On Thursday morning the Nipsic was successfully floated out to her old anchorage. Her propeller is too much injured to be repaired in Samoa, and her rudder is gone.

The Vandalia was the most unfortunate vessel of the United States Squadron. She drifted, about 9 o'clock, near to the Calliope and the Olga came into collision with both. The Calliope struck her with great force on the port, doing considerable damage. The Vandalia still continued drifting almost in company with the Calliope, but the latter vessel, having lost nearly all her anchors, put full steam on and went steadily out to sea.

The captain of the Vandalia, seeing no hope of saving his ship, headed her for the shore, and in endeavoring to reach the sandy beach unfortunately struck the reef, and filled and sank before she could beach, within about fifty yards from the stern of the Nipsic.

The captain, paymaster, payclerk, lieutenant of marines and many men were washed overboard. The vessel was completely submerged, and all hands had to take to the rigging, where they remained until the Trenton was driven alongside about 8 o'clock in the night, when most of the officers and crew got on the Trenton, excepting Lieutenant Ripley, who jumped into the sea just before the mast gave way, and with great difficulty swam to the shore. He then procured a whaleboat, and, with the aid of Samoans, got a line out to the wreck. The loss of life in the Vandalia were the commander, taree officers and thirty-nine seamen and marines.

The Trenton, meanwhile, was gradually coming closer to the land. She had her bridge ports broken in, which left an opening, and the sea came in great quantities through this opening and the hawse pipes, getting into the fires. This was unfortunately fatal to the chances of saving the Admiral's ship.

The engineers were unable to keep up steam. All hands were ordered to the pumps, which were kept constantly going all day. About 3 o'clock the Trenton had drifted down toward the Olga, which vessel was then about 500 yards from the reef. Both ships tried to avoid touching, but a collison was inevitable. The Olga's bow struck the Trenton on the quarter, opening a large breach and doing other damage, and the Olga's bow was smashed.

After the vessels cleared each other the Trenton drifted still further toward the reef, and one time held fairly well to her anchors; but at about 8 o'clock she dropped down just clear of the reef and on to the Vandalia. The Trenton's stern was aground. She was broadside on to the sunken vessel, and the poor fellows who had been on the Vandalia's yard about twelve hours got on to the Trenton, being assisted by the Admiral's crew with lines and other contrivances.

On Sunday morning boats were busily engaged all day in removing the men from the ship to the shore, which was accomplished without accident. All were removed before night. On Monday 250 Samoans from Mataafa's camp and the men-of-war sailors were working hard all day saving property from the Trenton, and several Samoans and sailors were also engaged working on the other ships ashore.

No lives were lost. The Trenton is a total wreck. One of the men was killed early in the morning of Saturday by being crushed among the timber after the collision. His name was Joseph Hewlett, a colored man.

The Olga, after slipping her cables and getting clear of the Trenton, managed to make headway against the sea for a short time, and hopes were entertained that this vessel, the last left afloat in the harbor, would be saved, but within half an hour she was run into one of the best positions for beaching in the harbor.

The Nipsic is fitted up with the Vandalia's funnel. Her rudder and stern post are gone, propeller bent and twisted.

The Trenton is hard and fast on the reef. Her bottom is full of holes and filled with water up to her gun deck. The crews have been working ten hours daily trying to save some of the rigging and personal effects and stores. The Vandalia is totally lost. Nothing can be saved from her.

Nearly every day since the wrecks of the German and American vessels bodies of the drowned are being washed up, greatly decomposed and unrecognizable.

Only forty of our dead sailors' bodies have been found off Apia. Some of our officers and men attended the German memorial service, but not a German was present at the American services. Admiral Kimberly shows that the Trenton could not have been saved, because the badly constructed hawse-holes allowed water to pour in and flood the engine-room, putting out the fires. He says the Trenton had all steam on, but that her engines were not powerful enough to save her.

On the Tuesday following the disaster divers recovered the safe of the Vandalia, which contained $40,000.

A rumor is current in Apia that the Admiral and Consuls are endeavoring to arrange matters between Mataafa and Tamasese, so as to induce them to return to their homes until after the Samoan conference.

There were some disgraceful scenes at Apia, it appears, after the terrible disaster in the harbor on March 16.

Some of the men rescued from the American and German war-vessels got drunk, and there was a good deal of feeling against the German sailors on the part of our men.

Captain Fritz, the senior German officer, when asked to help to restore order, begged to be excused, saying he was afraid the Americans would attack the German sailors. He further requested that the American officers should take full charge.

This was done, and the American sailors were not allowed to approach the lower part of the town, where the Germans had their headquarters. The next great question was how to get the news of the disaster to America and Europe. Frank Wilson was sent to Futuila Island, where he boarded the steamer Mariposa for Auckland, from whence he telegraphed the news.

The Calliope took on coal, and Thursday, March 19, after firing thirten guns as a salute to Admiral Kimberly, sailed for Sydney.

Order was generally restored in Apia in a few days. A large force of Samoans succeeded in hauling off the Nipsic. The Trenton's sailors are temporarily quartered in tents in the middle of the town. The Vandalia's men are quartered near the American Consulate. The survivers of the German vessels are quartered in the German Trading Company's warehouse.

Most of the merchant vessels in the harbor at the time of the storm belonged to the German Trading Company.

Admiral Kimberly, commanding the American fleet, was the last to leave the Trenton, his flag-ship. He said he considered faulty construction of the Trenton's hawse-pipes as indirectly the cause of her wreck.

Within a few days of the storm a condition of things resembling order had been brought about. The marines and Mataafa's police had been actively at work in this direction.

The Germans and Americans held memorial services at different dates for the dead. At the German service Admiral Kimberly and other American officers attended.

Only about one-fourth of the bodies have been recovered. Some of these were badly mutilated. It was difficult to identify them, or even to tell the nationality, and it was finally determined to bury all at one spot together.

A body, thought to be that of Captain Schoonmaker, was found up the coast some miles distant from the immediate scene of the disaster.

VAULTS FULL OF MONEY.

Counting the Millions in the United States Sub-Treasury.

Assistant Treasurer Ellis H. Roberts has begun his official duties at the United States Sub-Treasury in New York, and as required by law there is to be an official count of all the money turned over to his charge.

The count of the cash in the Treasury vaults was begun by fifteen experts from Washington, under the direction of Assistant Cashier J. F. Meline, of the United States Treasury. The work started with the counting of the paper money, gold and silver certificates and United States Treasury notes, which aggregate about $25,000,000. Beside the paper money there are $108,000,000 of gold and $32,000,000 silver to be counted, in addition to United States bonds and other securities. The work of counting this immense sum of money will occupy from three weeks to a month, when the Assistant Treasurer will give his receipt for the amount in the vaults.

THE FATTEST WOMAN DEAD.

Death of Hannah Battersby, the Freak Weighing 800 Pounds.

Mrs. Hannah Battersby, said to be the largest woman in the world, died a few days ago at her home in Frankford, a suburb of Philadelphia. She had been ailing for several weeks. Mrs. Battersby was born in Vermont in 1842, and was of normal size until her twelfth year.

Then she began to develop, and at seventeen years of age she weighed 500 pounds. She married John Battersby, who traveled with her, exhibiting himself "as the greatest living skeleton." Mrs. Battersby, at the time of her marriage, weighed 688 pounds, and of late years her managers have claimed that she weighed 800 pounds.

THE MARKETS.

15 NEW YORK.

Beeves	3 95	@	5 10
Milch Cows, com. to good	25 00	@	45 00
Calves, common to prime	4 00	@	6 30
Sheep	3 75	@	6 25
Lambs	2 00	@	5 50
Hogs—Live	5 00	@	5 40
Dressed	6½	@	6¾
Flour—City Mill Extra	4 50	@	4 65
Patents	5 10	@	6 40
Wheat—No. 2 Red	85⅞	@	88⅝
Rye—State	59	@	61
Barley—Two-rowed State	70	@	74
Corn—Ungraded Mixed	41	@	44
Oats—No. 1 White	—	@	39
Mixed Western	30	@	33
Hay—No. 1	80	@	95
Straw—Long Rye	—	@	75
Lard—City Steam	—	@	6 70
Butter—Elgin Creamery	27½	@	28
Dairy, fair to good	18	@	24
West. Im. Creamery	17	@	23
Factory	10	@	19
Cheese—State Factory	10½	@	11
Skims—Light	8½	@	9
Western	9	@	10¾
Eggs—State and Penn	11⅝	@	12

BUFFALO.

Steers—Western	2 80	@	4 25
Sheep—Medium to Good	3 25	@	4 75
Lambs—Fair to Good	5 25	@	6 00
Hogs—Good to Choice Yorks	5 15	@	5 20
Flour—Family	5 00	@	5 25
Wheat—No. 2 Northern	—	@	89½
Corn—No. 3, Yellow	—	@	38½
Oats—No. 2, White	30¾	@	31¾
Barley—No. 1 Canada	—	@	70

BOSTON.

Flour—Spring Wheat Pat's	6 70	@	7 25
Corn—Steamer Yellow	43	@	46½
Oats—No. 2 White	31	@	40
Rye—State	65	@	70

WATERTOWN (MASS.) CATTLE MARKET.

Beef—Dressed weight	5	@	6
Sheep—Live weight	4	@	5½
Lambs	4½	@	6½
Hogs—Northern	—	@	5¾

PHILADELPHIA.

Flour—Penn. family	4 50	@	4 75
Wheat—No. 2, Red, April	91	@	92
Corn—No. 2, Mixed, April	41¾	@	42
Oats—Ungraded White	—	@	33½
Potatoes—Early Rose	30	@	40
Butter—Creamery Extra	—	@	27
Cheese—Part skims	6	@	8

LATER NEWS.

GENERAL CHARLES KINNAIRD GRAHAM, of the United States Army, died of pneumonia, at the Laurel House, Lakewood, N. J., aged sixty-five.

THE Conshohocken Worsted Company, of Philadelphia, has made an assignment. The company operates three mills and the monthly pay-roll amounted to about $35,000. Liabilities $900,000.

MRS. RUMMAGE, of Pittston, Penn., overcome by grief, committed suicide by jumping into a reservoir. Her son committed suicide a year ago, and her husband was killed by lightning last September.

CHARLES F. HATCH, President of the Wisconsin, Minnesota and Pacific Railway Company, and P. E. Lockwood, a real estate dealer and capitalist, formerly of New York, both committed suicide in Minneapolis, Minn.

THE Governor of South Carolina has granted a full pardon to two colored lynchers convicted of murder, his ground being that they had simply followed the example of white men, who had never been punished.

DAVID LINDSAY, a farmer over sixty years old, living near Ann Arbor, Mich., shot and killed his adult son in a drunken quarrel.

GUS SUNDERLAND, a colored boy, living at Mosely, S. C., was left by his mother to take care of a younger brother, and getting tired of the job, put a rope around the baby's neck and hung it to the rafter of the house. The child was dead when found.

A CYCLONE swept over Montgomery, County, Ala. Two men were instantly killed by lightning and several others were shocked and seriously injured. Houses were blown down and damage done to young corn and cotton crops.

A TERRIBLE forest fire in Patrick County, Va., swept everything before it. One man, six horses, a large number of hogs and cattle, and about 200 dwellings and tobacco barns were consumed. Many poor people are left in a destitute condition.

ATTORNEY-GENERAL MILLER presented to the Supreme Court the resolutions of the Bar on the death of Justice Matthews and made an appropriate speech, to which Chief Justice Fuller replied, and the resolutions were spread upon the records.

REAR ADMIRAL WILLIAM ROGERS TAYLOR, United States Navy, retired, died in Washington. He was born at Newport, R. I., November 7, 1811, and entered the navy as a midshipman in 1828.

THE Chinese Minister gave a gorgeous spread at Washington to the Cabinet and a host of high officials. A magnificent display of roses was one of the features of the banquet.

PRESIDENT HARRISON, accompanied by Mrs. Harrison and her guest, Miss Murphy, of Minneapolis, and Secretaries Blaine and Windom, went down the Potomac for a day's ride on the lighthouse tender Holly. The little vessel steamed for a distance of about forty miles, and then returned to the wharf, which was reached about six o'clock. Before leaving the President received the Chicago and All America baseball clubs in the East Room.

JOHN ALBERT BRIGHT, the candidate of the Liberal Unionists, was elected to succeed his father, the late John Bright, as representative of Birmingham in Parliament. Mr. Bright received 5610 votes, against 2560 votes for William C Beale, the Gladstonian candidate.

GABRIEL DUMONT, the late leader in the Riel rebellion in the Northwest Territory, has arrived again on the scene of the 1885 battles, and is addressing meetings of half-breeds, urging them to press their grievances upon the Canadian Government.

AT Ruatan, Jamaica, West Indies, the Rev. Henry Hobson, his wife and her companion, a young girl, all natives of Jamaica, were murdered by Joseph Bures.

MR. GOSCHEN, Chancellor of the British Exchequer, laid before the House the budget for the coming financial year. It shows a deficit of $10,000,000. This Mr. Goschen proposes to fill up by an increase of the death duties and a slight increase in the duty on beer.

COUNT HERBERT BISMARCK and Councilor Kranel will be German delegates to the Samoan Conference.

EX-PRESIDENT CLEVELAND has declined the post of one of the Commissioners of the New High Bridge Park, to which he was recently appointed by a New York Judge.

DR. SAMUEL W. GROSS, the eminent physician and surgeon of Philadelphia, has just died.

GENERAL SEIGEL has sent to Commissioner Tanner his resignation as Pension Agent at New York city, to take effect upon the appointment of his successor.

JUDGE WALLACE'S order dissolving the injunction of the Western Union Company was recorded in the United States Circuit Court. On Mayor Grant's order the Bureau of Incumbrances, of New York city, tore down the wires and poles on Broadway from Fourteenth street to Twentieth, and were to continue on until Fifty-eighth street was reached.

JAMES A. SEXTON has been appointed Postmaster at Chicago.

W. H. PETTIT, aged seventy-two, his wife and his son, Washington, got into a fight at Kearney, Neb., over a loaded gun. The fight ended when the gun went off and blew the old man's head to atoms.

THE schooner Rio Lupton capsized in Albermarle Sound, N. C. The Captain and one of the crew were drowned.

CHARLES FUNK, a cigar manufacturer, of Kankakee, Ill., shot his divorced wife fatally and then killed himself.

THIRTY-FIVE residences and business houses in Muir, Mich., were burned.

A WONDERFULLY rich discovery of copper was made at Duluth, Minn., by workmen excavating for a public building site.